

CAUDINA INTERMEDIA, A NEW SPECIES OF SEA
CUCUMBER FROM THE SOUTH CHINA SEA
(ECHINODERMATA: HOLOTHUROIDEA: MOLPADIIDA)

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Abstract.—*Caudina intermedia*, new species is described. The bodywall ossicles of this species are exclusively tables; knobbed buttons or plates are absent. The tables are typical of the genus *Caudina* Stimpson, 1853 in the strict sense, but the absence of other ossicle types suggests some affinities with the genus *Hedingia* Deichmann, 1938. A revised key to the known species of *Caudina* is presented.

Subsequent to the publication of our recent paper on the molpadiid sea cucumbers of China (Pawson & Liao 1992), an additional new molpadiid species was found in the collections of the Institute of Oceanology, Academia Sinica, Qingdao (IOAS).

Family Caudinidae Heding, 1931
Caudina Stimpson, 1853

For a summary of the caudinids of China, see Pawson & Liao (1992).

Caudina intermedia, new species
Fig. 1A–G

Material examined.—Holotype, IOAS E1056, off eastern Guangdong, 21°45'N, 115°30'E, 9 Jan 1960, 107 m, muddy sand bottom. Paratype, IOAS E1057, same locality as Holotype.

Diagnosis.—Ossicles of body wall exclusively tables with solid spires derived from four pillars fused together, terminating in a few teeth. Knobbed buttons, perforated plates, and phosphatic deposits absent.

Description.—Body more or less barrel-shaped, with conspicuous narrow tail. Holotype 19 mm long, 10 mm in diameter, tail 7 mm long; Paratype approximately the same size. Body wall thin, translucent. Anus surrounded by five minute anal teeth. Color in alcohol dirty gray to whitish. Radial piec-

es of calcareous ring with short bifid posterior projections; interradial pieces slightly wider than radials (Fig. 1G). Stone canal and polian vesicle single.

Body wall ossicles exclusively tables, differing slightly in various parts of the body. In anterior body wall, disc more or less circular or irregular in outline, 130–180 μm in diameter (\bar{X} 148 μm , SD 9.3), with four large central perforations and 5–10 peripheral ones. Spire tall, average height 150 μm , solid, derived from four converging and fused pillars, terminating in three or four spines (Fig. 1A, B). In median and posterior body wall ossicles, disc more or less square in outline, average diameter 150 μm , commonly with four large perforations; spire solid, average height 100 μm , ending in three blunt teeth (Fig. 1C, D). Tables in tail (Fig. 1E, F) smaller, with numerous perforations and small knobs on periphery and elsewhere on disc. Spire low, solid; in a few cases a single crossbar present.

Remarks.—This new species is distinct from other *Caudina* species in lacking accessory ossicles in the form of buttons or plates (see key below). In possessing only tables in the body wall, *C. intermedia* approaches *Hedingia* Deichmann, 1938, but the tables of *Hedingia* are usually considerably larger (200–300 μm), have more perforations, and typically have two-pillared or

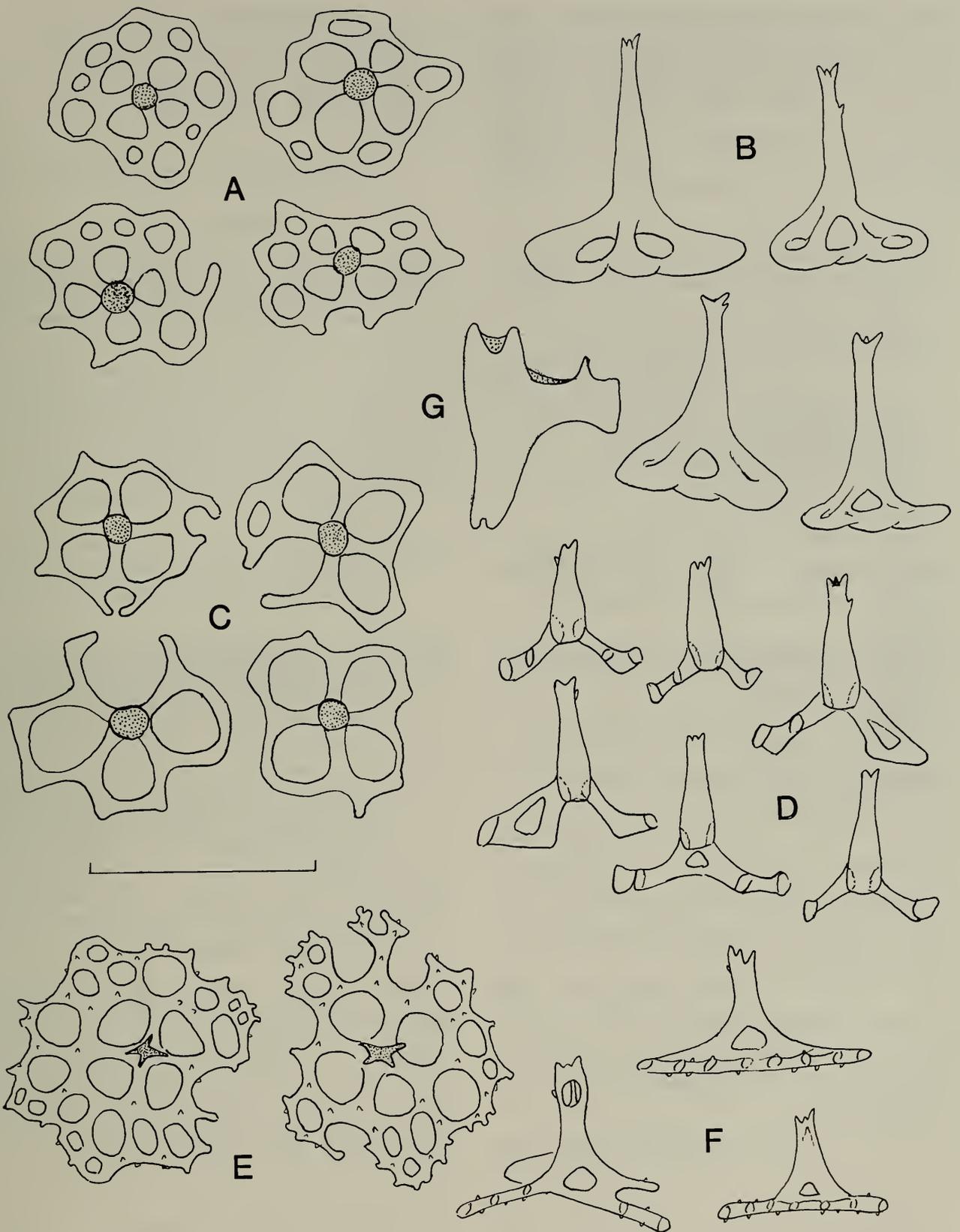


Fig. 1. *Caudina intermedia*, new species. A, tables from anterior body wall; B, same in profile view; C, tables from median and posterior body wall; D, same, in profile view; E, tables from tail; F, same, in profile view; G, radial and interradial pieces of calcareous ring. The scale measures 200 μ m for A–D, 100 μ m for E–F, and 1.2 mm for G.

(more commonly) three-pillared spires. Both specimens of *C. intermedia* are only 19 mm long. It is conceivable that buttons or plates may develop with further growth, but not likely, for in other species of *Caudina* the full complement of ossicle types is reached at an early age and small size.

Key to the Known Species of *Caudina*
(modified after Pawson & Liao 1992)

- 1. Tables inconspicuous, scarce, reduced to rods or plates, or lacking
..... *arenicola* (Stimpson, 1853)
- Tables conspicuous, numerous, with well-developed spire and disk 2
- 2. Tables accompanied by knobbed buttons or perforated plates 3
- Only tables present; buttons and plates absent .. *intermedia*, new species
- 3. Tables accompanied by knobbed buttons 4
- Tables accompanied by perforated plates; no buttons 5
- 4. Buttons not abundant, weakly knobbed, usually oval in outline, with two large elliptical and two small circular holes
..... *arenata* Gould, 1841
- Buttons abundant, strongly knobbed, usually with irregular outline, the four holes more or less alike in size and form
..... *similis* (Augustin, 1908)
- 5. Discs of tables 180–280 μm in diameter; perforated plates very variable in form and in number of holes, lacking knobs
..... *atacta* Pawson & Liao 1992

- Discs of tables 150–180 μm in diameter; perforated plates vary only slightly in form and in number of holes, often possessing a few low knobs
... *zhejiangensis* Pawson & Liao 1992

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